

Appl. No. 10/765,752
Reply to Office Action of January 9, 2006

WHAT IS CLAIMED IS:

1. (Previously Presented) An optical communication module for performing single-core bi-directional communication, comprising:

an optical fiber;

a light-emitting element for emitting light; and

a photoreceptor element for receiving light,

wherein said optical fiber has an end face at one end, said end face having an angled portion forming a reflecting surface;

wherein either one of said light-emitting element and said photoreceptor element is arranged adjacent to an end of the fiber along an axis of light propagation and faces said end face of said optical fiber, and the other of said light-emitting element and said photoreceptor element is arranged adjacent an outer surface of said optical fiber in a radial direction from the center of the optical fiber and faces said reflecting surface; and

wherein said photoreceptor element is arranged outside a maximum diffusion range of the light emitted from said light-emitting element.

2. (Previously Presented) The optical communication module according to claim 1, wherein a whole of said end face of said optical fiber is obliquely angled to form the reflecting surface.

3. (Previously Presented) The optical communication module according to claim 1, wherein said light-emitting element is arranged with the element facing said end face of said optical fiber.

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4. (Previously Presented) The optical communication module according to claim 10, wherein a support member for said photoreceptor element is attached to the support member for said light-emitting element with the members being abutted.

5. (Previously Presented) The optical communication module according to claim 1, wherein said angled reflecting surface includes a portion of an end face of a core.

6. (Previously Presented) The optical communication module according to claim 5, wherein said angled reflecting surface inclines at an angle of about 45 degrees with respect to an optical axis of said fiber.

7. (Original) The optical communication module according to claim 1, wherein a light-receiving plane normal line of said photoreceptor element is arranged at an angle of about 90 degrees with respect to an optical axis of said fiber.

8. (Original) The optical communication module according to claim 1, wherein said light-emitting element is a surface-emitting semiconductor laser.

9. (Previously Presented) A connector incorporating an optical communication module, said optical communication module comprising:

a circuit for performing conversion between an electric signal and an optical signal;

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an optical fiber;
a light-emitting element for emitting light; and
a photoreceptor element for receiving light,
wherein said optical fiber has an end face at one end, said end face having an inclined part to form a reflecting surface;
wherein either one of said light-emitting element and said photoreceptor element is arranged adjacent to an end of the fiber along an axis of light propagation and faces said end face of said optical fiber, and the other of said light-emitting element and said photoreceptor element is arranged adjacent an outer surface of said optical fiber in a radial direction from the center of the optical fiber and faces said reflecting surface; and
wherein said photoreceptor element is arranged outside a maximum diffusion range of the light emitted from said light-emitting element.

10. (Previously Presented) The optical communication module according to claim 3, wherein a support member for said light-emitting element is attached to said end face of said optical fiber as abutted thereto.

11. (Previously Presented) An optical communication module for performing single-core bi-directional communication, comprising:
an optical fiber;
a first light-emitting element for emitting light and a first photoreceptor element for receiving light at one end of the fiber, and at least a second light-emitting element for

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emitting light at another end of the fiber, wherein said first photoreceptor element receives light emitted from said second light-emitting element;

wherein at least the one end of said optical fiber has an end face, said end face having an inclined part to form a reflecting surface;

wherein either one of said light-emitting element and said photoreceptor element is arranged adjacent to an end of the fiber along an axis of light propagation and faces said end face of said optical fiber, and the other of said light-emitting element and said photoreceptor element is arranged adjacent an outer surface of said optical fiber in a radial direction from the center of the optical fiber and faces said reflecting surface; and

wherein said photoreceptor element is arranged outside a maximum diffusion range of the light emitted from said light-emitting element.

Please add the following new claims:

12. (New) An optical communication module according to claim 1, wherein said end face of said optical fiber further includes a non-angled portion.

13. (New) An optical communication module according to claim 12, wherein said angled portion includes a portion of an end face of a core of said optical fiber.

14. (New) An optical communication module according to claim 13, wherein said photoreceptor is arranged adjacent an outer surface of said optical fiber in a radial direction from the center of the optical fiber and faces the reflecting surface and is

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positioned along said outer surface such that the photoreceptor is substantially beneath the angled portion of the end face of said optical fiber.

15. (New) An optical communication module according to claim 12, wherein said angled portion of the end face of said optical fiber further includes a film formed over a surface thereof for improving the reflecting efficiency of the reflecting surface, and further wherein the non-angled portion of the end face does not include such a film.

16. (New) A connector incorporating an optical communication module according to claim 9, wherein said end face of said optical fiber further includes a non-angled portion.

17. (New) A connector incorporating an optical communication module according to claim 16, wherein said angled portion includes a portion of an end face of a core of said optical fiber.

18. (New) A connector incorporating an optical communication module according to claim 17, wherein said photoreceptor is arranged adjacent an outer surface of said optical fiber in a radial direction from the center of the optical fiber and faces the reflecting surface and is positioned along said outer surface such that the photoreceptor is substantially beneath the angled portion of the end face of said optical fiber.

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19. (New) A connector incorporating an optical communication module according to claim 16, wherein said angled portion of the end face of said optical fiber further includes a film formed over a surface thereof for improving the reflecting efficiency of the reflecting surface, and further wherein the non-angled portion of the end face does not include such a film.